PREVENTION OF CONGENITAL SYPHILIS—1*

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For many years there has been in operation, at the Corporation antenatal clinics in Glasgow, a scheme of treatment for expectant mothers who show evidence of infection with venereal disease. This department must have been one of the first in the country to undertake such diagnosis and treatment, since the scheme was initiated in 1924—twenty years ago. Just what the problem of prenatal syphilis amounts to and what the number is of infected mothers who may potentially give rise to infection in their children in this country, are both extremely difficult to estimate. One fact about which there is no difficulty or doubt, however, is that, in general, foetal infection with syphilis is preventable. Between the two wars our failure to prevent prenatal syphilis has been largely due to the fact that our medical handling of expectant mothers is relatively ill organized, and has fallen short of providing really first-class preventive care from every angle.

The following table shows the incidence of congenital syphilis in Scotland, England and Wales since 1930.

TABLE 1—CONGENITAL SYPHILIS

	SCOTLAND			ENGLAND AND WALES		
	No. of Cases		Case rate (less than 1 year)	No. of Cases		Case rate (less than 1 year)
	All ages	Less than 1 year	per 1,000 births	All ages	Less than 1 year	per 1,000 births
1931	710	180	1·95	2,439	339	0·53
1932	657	173	1·90	2,144	302	0·49
1933	641	164	1·89	2,016	305	0·53
1934	658	161	1·81	2,008	296	0·49
1935	540	138	1·56	2,031	251	0·41
1936	540	138	1·55	1,908	241	0·39
1937	575	136	1·54	1,829	211	0·34
1938	621	174	1·96	1,738	216	0·34
1939	497	134	1·54	1,614	217	0·35
1940	358	100	1·15	1,358	191	0·31
1941	352	92	1·02	1,380	223	0·37
1942	319	85	0·93	1,464	245	0·37

This table is compiled from the recorded clinic returns. The marked difference in the rates for the two countries shows that the clinic figures cannot be taken as an accurate index of the incidence. In addition, it is probable that the special returns under the Glasgow scheme weight the Scottish incidence as compared with the English. It is evident, however, that although a decrease has taken place the incidence is still unduly high.

In most instances the responsibility for syphilis in marriage can be squarely placed upon antemarital sexual exposure of young men and women and the extramarital exposures after marriage ; this points directly to the need for combating promiscuous sex relations, and to the education of young people, as the most fundamental form of attack on this problem.

Given the woman infected and pregnant, however, our next line of attack on the problem is to ensure skilled antenatal supervision, which will ensure diagnosis of the infection and adequate and effective treatment during pregnancy. From every point of view, apart from the condition we are particularly interested in today, antenatal care is best given by a skilled specialist, and for the vast majority of women this means at a well organized antenatal clinic. That this fact is appreciated, not only by the patients themselves but also by the general practitioners and midwives up and down the country, is shown by the steadily increasing attendance at antenatal clinics. The following are the figures for Glasgow.

Average number of births per annum, 22,000

1931	*1939*	*1940*	*1942*	*1943*
6,057	9,112	9,100	10,558	11,067

Everything should be done to expedite the further development of a well organized, well staffed antenatal clinic service, which is integrated with the maternity hospital accommodation of the area. It is by means of such a service that effective educational and preventive medical work can best be carried out.

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Given the pregnant woman under supervision, the next step is to ascertain whether she has become infected with syphilis and the duration of her infection. The prognosis with regard to the production of a healthy child largely depends on the stage of infection. If early symptoms are present clinically, the infection is probably very virulent and the outlook with regard to the child is not good. In 1943 there were 32 cases of congenital syphilis reported in Glasgow from clinics and one death certified from congenital syphilis in addition, that is 33 altogether. This one reported death occurred in a child of a mother who attended a private practitioner for antenatal care and was confined in hospital; the child developed clinical evidence of the infection and died within 6 weeks. In 6 of the 32 clinic cases the infection of the mothers had gone undetected—the women had had no antenatal care—and the children were diagnosed at the Children's Hospital. Of the 26 other clinic cases, 17 were born of women who showed either primary or secondary syphilitic infection during pregnancy and all had reported directly to a venereal disease clinic with these symptoms. A feature of these cases was the late stage of pregnancy at which the infection must have taken place and at which symptoms developed. The time available for treatment of the mother was quite insufficient to protect the child completely. There were 4 children whose infection was so overwhelming that they died, despite treatment in hospital, before they were 3 months old. That even some treatment in pregnancy does help to protect the child is shown by the fact that 9—more than half the number—of the children never showed any clinical signs, the diagnosis being made entirely from the strongly positive blood tests. Ten of the women were unmarried and in several of the married women pregnancy was illegitimate. Five were aged 20 years and under, and 10 between 20 and 25 years. This high proportion of illegitimate infected pregnancies is a new development in the problem of congenital syphilis in Glasgow. Such cases are a direct product of the war situation and are an indication of serious promiscuity.

Apart from these acute forms of syphilis, which point to the presence of a rather virulent type of infection contracted late in pregnancy, normally the diagnosis of syphilis in the pregnant woman is much more difficult than is the diagnosis in the non-pregnant woman, because of the ameliorating influence of pregnancy on the course of the disease. In most instances the patient has had no primary or secondary symptoms, or they have been so slight as to go unnoticed—a real masking of the symptoms by pregnancy. The only method of ascertaining whether infection is present or not, in these cases, is by taking blood for the Wassermann and Kahn test. If it is verified, a strongly serological test in a pregnant woman is diagnostic of syphilis.

This routine testing of patients at the corporation antenatal clinics was begun in Glasgow 20 years ago. At that time something under 1,000 women attended the clinics and the percentage of positive results was about 5. The figures for the last few years are as follows.

TABLE 2—ANTENATAL SPECIMENS

Wassermann and Kahn Tests

YEAR	SPECIMENS	PERCENTAGE POSITIVE
1937	7,855	1·8
1938	8,402	1·7
1939	8,616	1·22
1940	8,714	1·3
1941	8,327	0·8
1942	10,222	1·2
1943	11,067	1·8

From these women attending the antenatal clinics, only 9 children were born last year suffering from congenital syphilis, so far as can be proved; 4 other women gave birth to stillbirths and 3 to miscarriages. Although it is believed from the history and investigation that these cases were non-syphilitic, it is, of course, not possible to be quite certain. In 6 of the 9 cases the infection was discovered late in pregnancy, that is, the women reported to the clinic late; in 3 the infection was discovered before they were 5 months' pregnant, but in 2 of these attendance unfortunately was very irregular. Consequently, of the 9 cases, all but one received inadequate treatment. This one patient had a concurrent anaemia of a severe type, and the treatment she received was reduced in amount for medical reasons. In one of the cases the patient was an 8-para.; one 3-para.; four 1-para. From a

detailed investigation in order to establish the possible duration of the infection, all were considered to be of less than 5 years' duration.

The parity and age of the patient are important, because the significance of a positive Wassermann reaction in pregnancy from the point of view of risk of infection to the child (and the amount of treatment urgently needed) varies directly with the duration of time since infection. After 5 years, the risk to the child in most cases is less, although occasionally an infected child may be born years after the date of the original infection. A patient with a strongly positive reaction, confirmed by a second test, should always be given antisyphilitic treatment. The success of this treatment will largely depend upon the time at which it can be begun in pregnancy, and the earlier the patient reports the better. The importance of having antenatal care from the earliest months is being increasingly realized by the public, and for the last few years more than half the number of patients are reporting before the sixth month of pregnancy, with an even higher percentage increase at 4-5 months during the past 2 years.

It is apparent, of course, that one blood sample taken at the first attendance in pregnancy and found to be negative may give a false security, in that an infection contracted later in the pregnancy might go undetected. It is often advised that ideally a blood test should be made 3 times during pregnancy—(1) at first attendance, (2) at the 6th month and (3) at the 8th-9th month. Although such a standard may be highly desirable in the individual case, we have to consider its practical application to all expectant mothers, the amount of equipment, labour and cost of taking and examining this very large number of blood specimens. Would the dividend secured warrant the expenditure of time, labour and money ? The answer is, " No". In only one of the 17 acute cases did the patient report at an early stage to an antenatal clinic before she had become infected and when the blood test was negative. All the patients had symptoms which produced pain and discomfort and led them to seek medical advice. Furthermore, three tests would not be acceptable to the ordinary antenatal patient, and the present results from a standard of one routine test, except where infection is definitely likely, in no way justify the substitution of such stringent standards of testing.

Infection of the new-born infant

One of the features of prenatal infection of the child with syphilis is the great variability in the course of the infection after birth. This variability may be attributable partly to the influence of the time of infection *in utero*, and partly to the influence of the special defence mechanism of pregnancy. It is probable that it is more a matter of special protection than of special resistance, and that the defence mechanism of the mother extends over to the child and protects it. Whatever may be the reason, the fact remains that the diagnosis of congenital syphilis in the child is not always easy. When clinical signs are present there is no difficulty. It is the non-clinical case, and particularly that of the child whose mother's blood has been known to be positive in pregnancy, which presents difficulty. These cases present much the same difficulty as does that type of infection in the pregnant woman. We have found in these cases that repeated testing of the blood at intervals is necessary. The infant's blood may be negative for a week or two after birth and later become positive. Four such cases occurred in a series of 17 instances of acute infection ; all 4 infants were negative at one month but became positive at varying intervals up to 3 months. They were all hospital cases and could be tested regularly. They illustrate the difficulty of confirming diagnosis in out-patient children, whose mothers often fail to appreciate the necessity for these repeated tests. We try to achieve a standard of observation in a potential syphilitic child by testing the blood at one month, three months and one year.

It follows, therefore, that the testing of cord blood is an inaccurate method of estimating the presence or absence of congenital syphilis for two main reasons—(1) the test itself may be falsely positive, and (2) a single blood test, as has been pointed out, cannot be accepted as final evidence.

The results of the Glasgow scheme of treatment are shown in the following table.

TABLE 3—CONGENITAL SYPHILIS

Year	All cases	Cases 1 year	Year	All cases	Cases 1 year	Year	All cases	Cases 1 year
1922	1,023	335	1929	351	154	1937	177	36
1923	818	269	1930	260	128	1938	141	53
1924	662	202	1931	270	73	1939	136	39
1925	575	211	1932	240	72	1940	96	23
1926	493	174	1933	261	67	1941	67	15
1927	551	119	1934	302	65	1942	71	27
1928	498	113	1935	228	53	1943	102	32
			1936	218	60			

From the outset the scheme was based on this general principle, that the venereal diseases in mothers and children should, as far as possible, be treated where they are detected, whether at an antenatal clinic or a child welfare clinic, or in a maternity hospital, and that the administration of treatment should be regarded as an integral part of maternity and child welfare.

All antenatal patients have a routine serological test carried out. The taking of the blood is done by one of the health visiting staff. If a positive result is reported, a second specimen is taken. If confirmation of infection is obtained, antisyphilitic treatment is given at the clinic.

Such success as we have achieved in Glasgow is largely due to the fact that there is no delay in treatment and that it is a much easier task to induce the pregnant woman to come for treatment to the ordinary antenatal clinic, where no difference is made between herself and any other patients, and where she receives the treatment privately and unobtrusively. Certain special sessions are set aside for the continued postnatal treatment, and for the treatment of the child if that is found to be necessary. In this way the patient continues to receive treatment from the same doctor and health visitor, and the place of treatment is not a venereal disease clinic, but the child welfare centre which she is accustomed to attend.

A pertinent question is whether child welfare medical officers are fitted to make this diagnosis and give antisyphilitic treatment. They are not, unless they have special training. In Glasgow, ever since the inception of the scheme, the importance of linking the venereal disease and child welfare staffs has been recognized, and several medical officers of the child welfare staff are part-time medical officers of the female venereal disease clinics. The chief female venereal disease officer, who owing to pressure of work has now become full-time venereal disease officer, was originally a child welfare medical officer.

There is no doubt whatever that the integration of these two Public Health services is what we need to tackle the problem of prenatal and familial syphilis. These infections raise medico-social problems of a peculiar interest and significance and bring the medical officer into contact with practically every aspect of the disease of syphilis. She needs, therefore, to be an expert in the diagnosis and treatment of syphilis in all its aspects. Similarly, the medical officers at the *ad hoc* venereal disease treatment clinics are more effective in their medico-social work when they are full-time working members of the Public Health Department, and continue to carry out other public health duties.

The scheme and its results up to the outbreak of war are a first-class example of a public health preventive measure applied successfully to a high proportion of the expectant mothers in the city. Whereas in 1930 the number reported of congenitally syphilitic children under one year was 128, the attendances at the clinics were only a little over 3,000. In 1931, however, when the attendances suddenly doubled, the number of cases of congenital syphilis in infants fell to 73, as might have been expected.

Up to the outbreak of war it appeared as though we had virtually controlled the incidence of the disease in the city. Since the outbreak of war, however, the problem of prevention has assumed another aspect and we now require another method of attack. The ordinary marital infection is still being controlled by the antenatal venereal disease scheme of treatment, as has been shown in the analysis of the recorded cases of congenital syphilis. The new problem is that of acute

infection occurring in pregnancy, due to promiscuity. This type of case is now the predominant problem in Glasgow and its control is not influenced by the organized antenatal clinic system of treatment. Its control is dependent upon the control of venereal disease as an infectious disease.

The suggestion that congenital syphilis alone should be notifiable should be opposed. The success of our persistent and unobtrusive preventive scheme, at the antenatal clinics, shows clearly that we had got control of the problem in the ordinary population without notification. Notification of congenital syphilis, as such, would have little or no effect in the reduction in the number of syphilitic children born to these women, who are infected actually during their pregnancy, and who are promiscuous in their behaviour. Such women are a serious problem and a real menace to society. They illustrate clearly the urgent necessity for further measures for the control of venereal diseases generally. Only by such measures will they ever be effectively dealt with. In Glasgow we have developed to a high degree the follow-up system under the voluntary treatment scheme by specially trained health visitor almoners, and I have told you of the special linking of the maternity and child welfare and venereal disease staffs. Despite the combined efforts of these medical officers and health visitors to do everything to trace, follow up and control these patients, it is a serious matter that more than one-half the total number of congenital syphilitic infections in Glasgow last year occurred in children born of these women. These facts speak for themselves. The present position cannot be allowed to continue, and it is clear that we must be given power to deal radically with promiscuous men and women.

Strong support should be given to the notification of the venereal diseases. No one can be satisfied with the present position and, although the long-term policy of education and the provision of decent living conditions for everyone are of fundamental importance, statutory public health measures are of equal importance. If these are not secured speedily, the position at the end of hostilities may become worse, with the result that tragedy in many families and wastage of infant life will be increased.

PREVENTION OF CONGENITAL SYPHILIS—2*

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I am no newcomer to this subject, for more than sixteen years ago, to be exact in January, 1928, I delivered an address before this Society on "The Antenatal Treatment of Syphilis" which was followed by a discussion opened by Colonel Harrison all of which is recorded in the fourth volume of the *British Journal of Venereal Diseases*. Being essentially a prophylactic practitioner, my interest in this aspect of venereal disease has not in the meantime flagged but, on the contrary, has been stimulated by the apparent apathy of authorities, lay and medical, in failing to realize the seriousness of the plight of congenital syphilitic victims—the blind, the deaf, the lame, the mentally defective, and others who suffer from the effects of this disease, to say nothing of the deaths, foetal and infantile, annually attributable to syphilis. It is refreshing therefore to hear from Dr. Wattie of the valuable results which have been achieved in one of the largest cities of the more enlightened part of Great Britain; she and her far-sighted chief, Sir Alexander MacGregor, are both to be congratulated upon having initiated and successfully carried through a practical scheme for the examination of expectant mothers at the Glasgow Corporation's antenatal clinics and for their treatment, when necessary, at the same clinics. They are not referred to venereal diseases clinics. This is the secret of the success of the Glasgow scheme, although doubtless Dr. Wattie's enthusiasm has contributed to it in no small measure. As she has told us the number of congenital syphilitics under one year of age reported to the Medical

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